

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Canceled)
2. (Currently Amended) A dental handpiece according to claim ± 6 , wherein it includes at least two rotary coupling members mounted to slide radially in respective transverse passages regularly distributed around the longitudinal axis to balance the radial forces of the rotary coupling members between the male and female coupling portions.
3. (Currently Amended) A dental handpiece according to claim ± 6 , wherein the rotary coupling member(s) are/is coupling balls.
4. (Currently Amended) A dental handpiece according to claim ± 6 , wherein the rotary coupling member(s) are/is mounted to slide radially in a respective transverse passage in the male coupling portion, and the coupling cavities are distributed annularly over the coaxial annular surface of the female coupling portion.
5. (Currently Amended) A dental handpiece according to claim ± 6 , wherein it includes means for adjusting the force of the spring means spring-loading the rotary coupling member(s).
6. (Currently Amended) ~~A dental handpiece according to claim 1, wherein:~~

A dental handpiece for driving continuous rotation of a dental tool, said handpiece including a drive shaft mounted to rotate around a longitudinal axis in a longitudinal bore of the handpiece and made up of a primary shaft and a secondary shaft which are coaxial, coupled together in series by torque limiter means for limiting the maximum torque that can be

transmitted, and provided with means for adjusting said maximum torque that can be transmitted, the torque limiter means including:

-- a male coupling portion constrained to rotate with a first shaft of the pair of shafts comprising the primary shaft and secondary shaft, and having a coaxial annular outside surface,

-- a female coupling portion constrained to rotate with a second shaft of the pair of shafts comprising the primary shaft and the secondary shaft, and having a coaxial annular inside surface overlapping the coaxial annular outside surface of the male coupling portion,

-- a series of coupling cavities distributed annularly over the coaxial annular surface of a first coupling portion of the pair of coupling portions comprising the male and female coupling portions, wherein the coupling cavities are longitudinal grooves with a circular arc-shaped cross section and a depth varying in the longitudinal direction,

-- at least one rotary coupling member with a rotation axis parallel to the longitudinal axis, mounted to slide radially in a transverse passage of a second coupling portion of the pair of coupling portions comprising the male and female coupling portions, and spring-loaded by spring means toward the coaxial annular surface of the first coupling portion of the pair of coupling portions comprising the male and female coupling portions so as to be partially engaged in said coupling cavities whilst remaining guided in said transverse passage, and

-- adjusting means accessible by the user for voluntary adjustment of the maximum torque that can be transmitted, wherein

-- relative longitudinal position adjustment means accessible to the user are provided for adjusting the relative longitudinal position of the male coupling portion in the female coupling portion,

so that the rotary coupling member(s) engage(s) in deeper or shallower portions of the coupling cavities as a function of the chosen relative longitudinal position, which determines the maximum torque that can be transmitted.

7. (Currently Amended) A dental handpiece according to claim ~~1~~ 6, wherein the transverse ~~channels~~ passages are oriented in radial directions.

8. (Currently Amended) ~~A dental handpiece according to claim 1~~

A dental handpiece for driving continuous rotation of a dental tool, said handpiece including a drive shaft mounted to rotate around a longitudinal axis in a longitudinal bore of the handpiece and made up of a primary shaft and a secondary shaft which are coaxial, coupled together in series by torque limiter means for limiting the maximum torque that can be transmitted, and provided with means for adjusting said maximum torque that can be transmitted, the torque limiter means including:

-- a male coupling portion constrained to rotate with a first shaft of the pair of shafts comprising the primary shaft and secondary shaft, and having a coaxial annular outside surface,

-- a female coupling portion constrained to rotate with a second shaft of the pair of shafts comprising the primary shaft and the secondary shaft, and having a coaxial annular inside surface overlapping the coaxial annular outside surface of the male coupling portion,

-- a series of coupling cavities distributed annularly over the coaxial annular surface of a first coupling portion of the pair of coupling portions comprising the male and female coupling portions,

-- at least one rotary coupling member with a rotation axis parallel to the longitudinal axis, mounted to slide radially in a transverse passage of a second coupling portion of the pair of coupling portions comprising the male and female coupling portions, and spring -

loaded by spring means toward the coaxial annular surface of the first coupling portion of the pair of coupling portions comprising the male and female coupling portions so as to be partially engaged in said coupling cavities whilst remaining guided in said transverse passage, wherein the transverse passage(s) are/is oriented obliquely to the radial directions, and

-- adjusting means accessible by the user for voluntary adjustment of the maximum torque that can be transmitted.

9. (Currently Amended) ~~A dental handpiece according to claim 1, wherein:~~

A dental handpiece for driving continuous rotation of a dental tool, said handpiece including a drive shaft mounted to rotate around a longitudinal axis in a longitudinal bore of the handpiece and made up of a primary shaft and a secondary shaft which are coaxial, coupled together in series by torque limiter means for limiting the maximum torque that can be transmitted, and provided with means for adjusting said maximum torque that can be transmitted, the torque limiter means including:

-- a male coupling portion constrained to rotate with a first shaft of the pair of shafts comprising the primary shaft and secondary shaft, and having a coaxial annular outside surface, wherein the male coupling portion is constituted by the distal end of the primary shaft,

-- a female coupling portion constrained to rotate with a second shaft of the pair of shafts comprising the primary shaft and the secondary shaft, and having a coaxial annular inside surface overlapping the coaxial annular outside surface of the male coupling portion, wherein the female coupling portion is a coupling ring mounted to overlap the adjacent ends of the primary shaft and the secondary shaft, and coupled to the secondary shaft by rotation-preventing means,

-- a series of coupling cavities distributed annularly over the coaxial annular surface of a first coupling portion of the pair of coupling portions comprising the male and female coupling portions,

-- at least one rotary coupling member with a rotation axis parallel to the longitudinal axis, mounted to slide radially in a transverse passage of a second coupling portion of the pair of coupling portions comprising the male and female coupling portions, and spring-loaded by spring means toward the coaxial annular surface of the first coupling portion of the pair of coupling portions comprising the male and female coupling portions so as to be partially engaged in said coupling cavities whilst remaining guided in said transverse passage, and

-- adjusting means accessible by the user for voluntary adjustment of the maximum torque that can be transmitted, wherein

-- the distal end of the primary shaft includes transverse passages for guiding coupling balls,

-- the distal end of the primary shaft includes an axial bore into which the transverse passages open,

-- a bearing portion is mounted to slide axially in said axial bore and has a frustoconical part in contact with the coupling balls to urge them radially outward, and

-- a compression spring is engaged axially between the bearing portion member and a calibration screw itself functionally engaged in a screwthreaded section of the axial bore.

10. (Currently Amended) A dental handpiece tool according to claim 9, wherein:

-- the coupling ring is slidably mounted on the proximal end of the secondary shaft, and includes coupling cavities in the form of longitudinal grooves whose depth varies in the longitudinal direction,

-- the coupling ring is freely rotatable and is constrained to move in axial translation with an adjuster ring itself slidably mounted on the handpiece body to be directly accessible to the user.

11. (Currently Amended) A dental handpiece ~~tool~~ according to claim ~~1~~ 6, including a main handpiece body, a handpiece neck and a handpiece head, wherein the torque-limiter means are housed in the neck of the handpiece.

12. (New) A dental handpiece according to claim 8, including a main handpiece body, a handpiece neck and a handpiece head, wherein the torque-limiter means are housed in the neck of the handpiece.

13. (New) A dental handpiece according to claim 9, including a main handpiece body, a handpiece neck and a handpiece head, wherein the torque-limiter means are housed in the neck of the handpiece.

14. (New) A dental handpiece for driving continuous rotation of a dental tool, said handpiece comprising:

a neck wherein balls are guided in transverse passages of an input shaft and are radially spaced apart by a support piece including a tapered part thrust by a spring; and

a linking ring comprising internal longitudinal grooves circular in cross-section and of variable depth along the longitudinal direction, wherein said linking ring is mounted on the end of said input shaft, and mounted sliding and locked in rotation on an output shaft,

wherein said balls are subjected to a reaction from said internal grooves of said linking ring under the action of a resisting torque applied by the tool to said output shaft greater than a predetermined threshold, thereby bringing said balls closer together and

countering said spring, and said balls are released, producing a disengagement which limits the transmitted torque and prevents the tool from breaking.

15. (New) A dental handpiece for driving continuous rotation of a dental tool, said handpiece comprising:

a neck wherein balls are guided in transverse passages of an input shaft and are radially spaced apart by a support piece including a tapered part thrust by a spring, said transverse passages being oriented obliquely to the radial directions; and

a linking ring comprising internal longitudinal grooves circular in cross-section and of variable depth along the longitudinal direction, wherein said linking ring is mounted on the end of said input shaft, and mounted sliding and locked in rotation on an output shaft,

wherein said balls are subjected to a reaction from said internal grooves of said linking ring under the action of a resisting torque applied by the tool to said output shaft greater than a predetermined threshold, thereby bringing said balls closer together and countering said spring, and said balls are released, producing a disengagement which limits the transmitted torque and prevents the tool from breaking.

16. (New) A dental handpiece for driving continuous rotation of a dental tool, said handpiece including a drive shaft mounted to rotate around a longitudinal axis in a longitudinal bore of the handpiece and made up of a primary shaft and a secondary shaft which are coaxial, coupled together in series by torque limiter means for limiting the maximum torque that can be transmitted, and provided with means for adjusting said maximum torque that can be transmitted, the torque limiter means including:

-- a male coupling portion constrained to rotate with a first shaft of the pair of shafts comprising the primary shaft and secondary shaft,

-- a female coupling portion constrained to rotate with a second shaft of the pair of shafts comprising the primary shaft and the secondary shaft,

-- a series of coupling cavities distributed annularly over a coaxial annular surface of a first coupling portion of the pair of coupling portions comprising the male and female coupling portions,

-- at least one rotary coupling member with a rotation axis parallel to the longitudinal axis, mounted to slide radially in a transverse passage of a second coupling portion of the pair of coupling portions comprising the male and female coupling portions, and

-- adjusting means accessible by the user for voluntary adjustment of the maximum torque that can be transmitted, wherein

-- relative longitudinal position adjustment means accessible to the user are provided for adjusting the relative longitudinal position of the male coupling portion in the female coupling portion,

so that the rotary coupling member(s) engage(s) in deeper or shallower portions of the coupling cavities as a function of the chosen relative longitudinal position, which determines the maximum torque that can be transmitted.

17. (New) A dental handpiece for driving continuous rotation of a dental tool, said handpiece including a drive shaft mounted to rotate around a longitudinal axis in a longitudinal bore of the handpiece and made up of a primary shaft and a secondary shaft which are coaxial, coupled together in series by torque limiter means for limiting the maximum torque that can be transmitted, and provided with means for adjusting said maximum torque that can be transmitted, the torque limiter means including:

-- a male coupling portion constrained to rotate with a first shaft of the pair of shafts comprising the primary shaft and secondary shaft,

-- a female coupling portion constrained to rotate with a second shaft of the pair of shafts comprising the primary shaft and the secondary shaft,

-- a series of coupling cavities distributed annularly over a coaxial annular surface of a first coupling portion of the pair of coupling portions comprising the male and female coupling portions,

-- at least one rotary coupling member with a rotation axis parallel to the longitudinal axis, mounted to slide radially in a transverse passage of a second coupling portion of the pair of coupling portions comprising the male and female coupling portions, wherein the transverse passage(s) are/is oriented obliquely to the radial directions, and

-- adjusting means accessible by the user for voluntary adjustment of the maximum torque that can be transmitted.

18. (New) A dental handpiece for driving continuous rotation of a dental tool, said handpiece including a drive shaft mounted to rotate around a longitudinal axis in a longitudinal bore of the handpiece and made up of a primary shaft and a secondary shaft which are coaxial, coupled together in series by torque limiter means for limiting the maximum torque that can be transmitted, and provided with means for adjusting said maximum torque that can be transmitted, the torque limiter means including:

-- a male coupling portion constrained to rotate with a first shaft of the pair of shafts comprising the primary shaft and secondary shaft, wherein the male coupling portion is constituted by the distal end of the primary shaft,

-- a female coupling portion constrained to rotate with a second shaft of the pair of shafts comprising the primary shaft and the secondary shaft, wherein the female coupling portion is a coupling ring mounted to overlap the adjacent ends of the primary shaft and the secondary shaft, and coupled to the secondary shaft by rotation-preventing means,

-- a series of coupling cavities distributed annularly over a coaxial annular surface of a first coupling portion of the pair of coupling portions comprising the male and female coupling portions,

-- at least one rotary coupling member with a rotation axis parallel to the longitudinal axis, mounted to slide radially in a transverse passage of a second coupling portion of the pair of coupling portions comprising the male and female coupling portions, and

-- adjusting means accessible by the user for voluntary adjustment of the maximum torque that can be transmitted, wherein

-- the distal end of the primary shaft includes transverse passages for guiding coupling balls,

-- the distal end of the primary shaft includes an axial bore into which the transverse passages open,

-- a bearing portion is mounted to slide axially in said axial bore and has a frustoconical part in contact with the coupling balls to urge them radially outward, and

-- a compression spring is engaged axially between the bearing portion and a calibration screw itself functionally engaged in a screwthreaded section of the axial bore.